Pearson Edexcel Functional Skills Level 2

This document should be used alongside the Pearson/Edexcel published Scheme of work that can be found here.

Maths Scheme of Work – Functional Skills Level 2

Unit	Prior Knowledge Edexcel award L1/FS L1 and previous units	Learning Opportunities	Colour band	Edexcel Award	Functional skills	GCSE
1. Read, write, order and compare positive and negative numbers of any size 2. Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	Read and write numbers up to one million (both written in words and using digits) Recognise and use positive and negative numbers in practical contexts (e.g. temperature, profit/loss)	1. read and write numbers of any size (both written in words and using digits) 2. explain the value represented by a specific digit in a given number 3. place numbers of any size in ascending and/or descending order, including positive and negative numbers 4. compare numbers using greater than and less than symbols 5. add, subtract, multiply and divide positive and negative numbers (up to one million) 5. understand and use approximation, rounding, estimation and reverse calculation as valid checking method Teaching ideas and resources [here]				
Extension Opportunities		Work out the total loss the business made last year. Is the cost per unit less than £40?				GCSE grade 4-5
Additional Teacher Notes		Learners may lack understanding that the position of a numeral gives it a particular value. Learners may not understand the value a digit represents in large numbers which have a zero in the middle, e.g. they may consider 10,148 to be one thousand one hundred and forty-eight. Learners may not understand that negative numbers are ordered in ascending order starting from the lowest value, which is represented by the highest numeral. Learners may not realise that subtracting a negative number involves adding a positive. Learners may make arithmetical errors due to an inability to recall timetables or a lack of checking procedures				

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3. Evaluate expressions and make substitutions in given formulae in words and symbols	Use simple formulae expressed in words for one- or two-step operations.	1. substitute a correct value for a variable in a formula 2. evaluate expressions in a given formula 3. follow the correct order of operations to evaluate a formula 4. understand the principles for rearranging formulae. 1. Teaching ideas and resources here				
Extension Opportunities		How much should Kirash charge for this job? Can Yoko afford to apply for a mortgage of more than £450,000?				Grade 4-5
Additional Teacher Notes		Learners may substitute incorrect values into a formula. Learners may not understand that a constant and variable placed together should be multiplied, e.g. $2d = 2 \times d$. Learners may not follow BIDMAS, especially when brackets are used. Learners may not know or understand how to calculate with indices				

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4. Identify and know the equivalence between fractions, decimals and percentages	Read, write, order and compare common fractions and mixed number Read, write, order and compare decimals up to three decimal places Read, write, order and compare percentages in whole numbers Recognise and calculate equivalences between common fractions, percentages and decimals	1. Recognise and calculate equivalences between fractions, percentages and decimals. Teaching ideas and resources here				
Extension Opportunities		In which subject was Julie most successful? Which group of people in the survey liked the product more?				GCSE grade 4-5
Additional Teacher Notes		Learners may confuse equivalences, e.g. 2/5 with 25% or 0.25. convert decimals into percentages incorrectly, e.g. 0.64 = 6.4%. may simplify the denominator only, rather than the whole fraction.		Learners may When simplifying, learners		

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5. Work out percentages of amounts and express one amount as a percentage of another 6. Calculate percentage change (any size increase and decrease), and original value after percentage change	Calculate percentages of quantities, including simple percentage increases and decreases by 5% and multiples thereof	1. work out percentages of quantities 2. express one amount as a percentage of another 3. calculate percentage change (any size increase and decrease) 4. work back to the original value after a percentage change Teaching ideas and resources [here](#)				
Extension Opportunities		Work out 12% of £84.79. Did more than 66% of people agree with the statement? Was the original price less than £450?				
Additional Teacher Notes		Learners may believe that increasing a number by x% is the same as increasing the number by x. Learners may make place value errors when converting between percentages and decimals, e.g. they may believe $0.67 = 6.7\%$. Learners may not understand the process to work out percentage change. Learners may use the discount % in calculations to find the original value, e.g. $299.25 \div 0.37$ rather than $299.25 \div (1 - 0.37)$, when the original value was decreased by 37% to give 299.25.				

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7. Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers 8. Express one number as a fraction of another	Find fractions of whole number quantities or measurements	1. find equivalent fractions (simplify fractions) 2. order fractions in ascending or descending order and compare them 3. add proper and improper fractions with different denominators 4. subtract proper and improper fractions with different denominators 5. work with mixed numbers 6. express one number as a fraction of another. Teaching ideas and resources [here](#)				
Extension Opportunities		Show this information as a fraction in its simplest form. Is the number of small apples harvested last year less than 3500?				GCSE grade 4-5
Additional Teacher Notes		Learners may confuse the numerator with the denominator and treat them as separate whole numbers. Learners may unnecessarily and incorrectly convert fractions into decimals to work out values using a calculator. Learners may fail to find a common denominator when adding or subtracting fractions with unlike denominators, or they may forget to apply changes to the numerator as well. Learners may believe that only whole numbers should be manipulated in calculations with improper or mixed fractions.				

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9. Order, approximate and compare decimals 10. Add, subtract, multiply and divide decimals up to three decimal places	Read, write and use decimals up to two decimal places.	1. explain the value represented by a specific digit in a given decimal 2. place decimals in ascending and/or descending order 3. compare decimals using greater than and less than symbols 4. add, subtract, multiply and divide decimals up to three decimal places 5. approximate by rounding to a whole number or to one, two or three decimal place Teaching ideas and resources [here](#)				
Extension Opportunities		Work out the difference between lap times. Is £375.45 more than $440? What length setting should the machine have, correct to 3 dp? What is the total cost of the project, rounded to 2 dp?				GCSE grade 4-5
Additional Teacher Notes		Learners may lack understanding that the position of a numeral gives it a particular value. Learners may believe a longer decimal is always larger, e.g. 2.10746 is more than 2.234. Learners may put the decimal point in an incorrect position during calculations (e.g. they may not align figures when adding or multiplying).				

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11. Understand and calculate using ratios, direct proportion and inverse proportion	Work with simple ratio and direct proportions	1. understand the multiplicative relationship between two quantities in a ratio 2. simplify ratio notation 3. relate ratios to fractions correctly 4. work out values of individual terms in a ratio and scale them up or down 5. understand how variables are related in direct and inverse proportion 6. understand the role of the constant in direct and inverse proportion. Teaching ideas and resources [here]				
Extension Opportunities		What amount of flour will you need for 7 people? How many litres of violet paint can you make with 300 ml of white paint? How much time will 4 workers need to pave the garden?				GCSE grade 4-5
Additional Teacher Notes		Learners may confuse ratio amounts with fractions, e.g. they may confuse 1 : 3 with 1/3. Learners may form ratios incorrectly, e.g. if there are 10 people, 3 of whom are women, they may believe there is a 3 : 10 ratio of women to men. Learners may form proportional relationships incorrectly and hence work out the value of the constant incorrectly.				

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12. Follow the order of precedence of operators, including indices	Follow the order of precedence of operators Recognise square numbers, cube numbers and roots.	1. understand that squaring means multiplying a number by itself 2. understand the concept of index notation 3. follow the order of operations to solve calculations Teaching ideas and resources here				
Extension Opportunities		What is the total amount James will have in his savings account after 3 years? How much should Richard charge for this job				GCSE grade 4-5
Additional Teacher Notes		Learners may not understand that indices require repeated multiplication, not multiplication by the index itself, e.g. 253 = 25 × 25 × 25, not 25 × 3. Learners may not follow the rules of BIDMAS and may instead complete calculations from left to right indiscriminately.				

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13. Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting	Calculate simple interest in multiples of 5% on amounts of money Calculate discounts in multiples of 5% on amounts of money	1. calculate confidently with money, using 2 dp accuracy and correct money notation 2. know and use the compound interest formula 3. work out percentages of quantities, including increases and decreases in a variety of money and budgeting contexts. Teaching ideas and resources here				
Extension Opportunities		What is the total amount of the investment after 3 years? Has the production of TV sets increased by more than 17%? Has the price of the laptop decreased by more than 29%?				GCSE grade 4-5
Additional Teacher Notes		Learners may believe that increasing a number by x% is the same as increasing the number by x. Learners may confuse discounts with interest. Learners may incorrectly convert a percentage to a decimal or fraction. Learners may round inaccurately, or truncate figures in the middle of their calculations. Learners may lack knowledge of the compound interest formula. Learners may not follow BIDMAS. Learners may use inconsistent time units when expressing compound frequency and length of investment.				

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14. Convert between metric and imperial units of length, weight and capacity using a) a conversion factor and b) a conversion graph	Convert between units of length, weight, capacity, money and time, in the same system Recognise and make use of simple scales on maps and drawings	1. convert between units of length, weight and capacity in metric and imperial systems 2. calculate using these units accurately to three decimal places 3. read and use effectively conversion factors and conversion graphs. Teaching ideas and resources [here](#)				
Extension Opportunities		What is the total weight of the parcel to the nearest 10 grams? Is 300 litres more than 60 gallons?				GCSE grade 4-5
Additional Teacher Notes		Learners may misunderstand scale factors when converting units and reading scales. Learners may miscalculate when using decimals.				

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Unit	Prior Knowledge Edexcel award L1/FS L1 and previous units	Learning Opportunities	Colour band	Edexcel Award	Functional skills	GCSE
15. Calculate using compound measures including speed, density and rates of pay	Substitution into formulae	1. recall, use and calculate using speed and density formulae 2. understand and convert between units of distance, time, mass, volume and money 3. apply knowledge of direct and inverse proportion to set rates of pay formulae (equations). Teaching ideas and resources [here]				
Extension Opportunities		Will Sam travel more than 320 km in 3.5 hours? Are 15 gallons of petrol enough for this journey? How much overtime pay will Usha get?				GCSE grade 4-5
Additional Teacher Notes		Learners may miscalculate when converting units and use inconsistent units in calculations. Learners may lack knowledge of the relevant formulae. Learners may set incorrect proportional relationships between values.				

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16. Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes. 17. Use formulae to find volumes and surface areas of 3-D shapes including cylinders	Calculate the area and perimeter of simple shapes including those that are made up of a combination of rectangles Calculate the volumes of cubes and cuboids	1. work out the perimeter of simple and composite shapes 2. work out the area of simple and composite shapes 3. calculate the volume of 3-D shapes, using formulae provided when necessary 4. calculate the surface area of 3-D shapes, using formulae provided when necessary 5. calculate using correct units to a required level of accuracy 6. recall the required formulae (as indicated in the specification) for perimeter, area and volume,e.g. area of rectangles, triangles and circles. Teaching ideas and resources here				
Extension Opportunities		How many fencing panels will Yemi need to surround the garden? Is £500 enough to buy all the tiles for the kitchen floor? Are 70,000 litres of water enough to fill this pool? How much will it cost to buy the paint needed to cover this statue?				GCSE grade 4-5
Additional Teacher Notes		Learners may confuse the concepts of area ('cover space') and perimeter ('around the space'). Learners may misinterpret 1-D, 2-D and 3-D units. Learners may miscalculate when converting between units. Learners may miscalculate when using decimals. Learners may not follow BIDMAS when using formulae, and may substitute values incorrectly. Learners may lack functional thinking when rounding, e.g. they may not round to the nearest whole number to find the number of boxes of tiles needed.				

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18. Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements	Recognise and make use of simple scales on maps and drawings	1. calculate actual dimensions from scale drawings 2. create a scale diagram given actual measurements. Teaching ideas and resources here				
Extension Opportunities		What is the area of the roof? Work out the distance between town A and town B. Create a scale drawing of the plan of the building.				GCSE grade 4-5
Additional Teacher Notes		Learners may not realise that the distance from a vertex to a line of symmetry is half the total length. Learners may confuse plans with elevations. Learners may use incorrect scale factors. Learners may misinterpret scales.				

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19. Use coordinates in 2-D, positive and negative, to specify the positions of points 22. Calculate values of angles and/or coordinates with 2-D and 3-D shapes	Draw 2-D shapes and demonstrate an understanding of line symmetry and knowledge of the relative size of angles Interpret plans, elevations and nets of simple 3-D shapes Use angles when describing position and direction, and measure angles in degrees	1. read coordinates to specify the position of a point 2. plot a point according to given coordinates (in all four quadrants) 3. calculate angles using knowledge of common shape characteristics (e.g. sum of internal angles, angles at a point, angles on a straight line, vertically opposite angles). Teaching ideas and resources [here]				
Extension Opportunities		Indicate the position of the camp on the map. What is the value of the angle at the apex of the shed?				GCSE grade 4-5
Additional Teacher Notes		Learners may confuse positive and negative coordinates. Learners may confuse the x and y axes. Learners may lack knowledge of common shape characteristics.				

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20. Understand and use common 2-D representations of 3-D objects 21. Draw 3-D shapes to include plans and elevations	Draw 2-D shapes and demonstrate an understanding of line symmetry and knowledge of the relative size of angles Interpret plans, elevations and nets of simple 3-D shape	1. interpret front elevations and plans of 3-D shapes interpret working nets of a cube, cuboid, cylinder, pyramid and prism 2. draw elevations and plans of simple 3-D shapes and identify lines of symmetry. Teaching ideas and resources [here]				
Extension Opportunities		Work out the area of the roof from the scale drawing. Create an accurate plan of the shed at 1 : 100 scale. Draw the side elevation of the house at 1 : 200 scale.				GCSE grade 4-5
Additional Teacher Notes		Learners may confuse plans with elevations. Learners may make errors relating to spatial awareness and relevant dimensions (joining edges) when designing a net. Learners may confuse units or misinterpret scales.				

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23.Calculate the median and mode of a set of quantities 24. Estimate the mean of a grouped frequency distribution from discrete data 25. Use the mean, median, mode and range to compare two sets of data	Find the mean and range of a set of quantities	1. analyse information presented in different ways and apply statistics to interpret it 2. work out the median of a set of quantities 3. work out the mode of a set of quantities 4. estimate the mean of a grouped frequency distribution from discrete data 5. use the mean, median, mode and range to compare two sets of data, including discrete grouped data. Teaching ideas and resources [here]				
Extension Opportunities		Work out the median salary in the company. Which type of soup was the most popular? What is the estimated mean time of an athlete in the 10 km run? Use statistics to compare the performance data from the warehouses.				GCSE grade 4-5

Additional Teacher Notes	Learners may confuse the terms 'range' and 'mean'.
	Learners may confuse 'mean', 'median' and 'mode'.
	Learners may incorrectly identify the lowest and highest values.
	Learners may not follow BIDMAS in mean calculations.
	Learners may not use the midpoint values when estimating the mean of grouped discrete data.
	Learners may divide by the number of class intervals rather than by the frequency total.

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26. Work out the probability of combined events including the use of diagrams and tables, including two-way tables 27. Express probabilities as fractions, decimals and percentages	Understand probability on a scale from 0 (impossible) to 1 (certain) and use probabilities to compare the likelihood of events Use equally likely outcomes to find the probabilities of simple events and express them as fractions	1. understand probability on a scale from 0 (impossible) to 1 (certain) 2. work out the probability of combined events including the use of diagrams and tables 3. express probability as a fraction or a decimal or percentage equivalent. Teaching ideas and resources here				
Extension Opportunities		What is the probability of selecting 2 red cards, one from each of two piles? What is the probability of throwing a total of 7 with two fair dice?				GCSE grade 4-5
Additional Teacher Notes		Learners may misunderstand percentage and decimal equivalents. Learners may not understand that the single event divided by the total number of events represents probability. Learners may write the probability of selecting one item out of the number of items with the same feature, rather than out of the total number of items.				

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28. Draw and interpret scatter diagrams and recognise positive and negative correlation	Represent discrete data in tables, diagrams and charts including pie charts, bar charts and line graphs	1. extract and interpret information from a scatter diagram 2. plot points accurately on a scatter diagram 3. draw a line of best fit on a scatter diagram 4. describe the correlation of the data plotted on a scatter diagram 5. represent discrete data on a scatter diagram, including accurate plotting, labels and selection of an appropriate scale. Teaching ideas and resources here				
Extension Opportunities		Plot a point on a scatter diagram. Describe the correlation shown on a scatter diagram. Read off values from a scatter diagram.				GCSE grade 4-5
Additional Teacher Notes		Learners may misinterpret scales or plot points incorrectly. Learners may forget to include labels (including a key), or labels may be inaccurate. Learners may misinterpret correlation.				